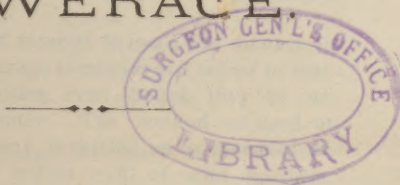

THE VON PODEWILS'
FÆCAL AND CREMATION
COMPANY.





THE
WAYS AND MEANS
OF
RELIEVING CITIES
OF
SEWERAGE.



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PODEWILS' FÆCAL EXTRACT M'F'G CO.

MUNICH, GERMANY, July 1884.

(Translated from the German in the Chemical Gazette
of Coethen.)

“Through the appearance of the cholera in the South of France, the important question as to the best method of *collecting and disposing* of the *faecal matter* is again one of the leading topics of the day. The great cholera expert, Dr. Koch, has conclusively demonstrated in his investigations that the principal seat of the cholera-bacillus is in the intestines, and therefore the excrement becomes the medium of further propagating the disease.

It may be of interest to learn the manner in which the sewerage is *collected and utilized* in various German cities, even though they be surrounded by water. The method as used at Munich, Germany, is carried on by means of an air-tight vault system built of solid masonry. These vaults collect the sewerage from the surrounding squares, which is removed at a period of six months, and they are constructed so as to permit only the pure strained water to enter the rivers and canals. This system would be safe

and secure were the vaults kept air and water-tight, and the sewerage not permitted to remain therein for so long a time.

The production of *faecal matter*, excrement and urine, according to the most reliable hygienists, is from 920 to 960 lbs. per capita, or about one-half cubic yard annually. With a population of of about 230,000 Munich would have an annual acquisition of 115,000 cubic yards of this *faecal matter*.

According to statistics, the exported *faecal matter* scarcely exceeds one-half of that which is created, consequently only 50 per cent. of the matter is carried off, and of this half, only the smaller portion is disposed of as a fertilizer. From July, 1883, to that month of the present year 22,291 cubic yards were shipped to various points, which at the outside does not represent more than 11,000 cubic yards of *faecal matter*.

The direct delivery to farmers in the neighborhood scarcely amounts to 26,000 cubic yards, which equals 18,000 cubic yards; on this basis, only 25 per cent. at the outside is disposed of as a *fertilizer*.

The question, where the balance of the produced *faecal matter* goes, which is not carried off, is easily answered: The vaults are not, in many cases, water-tight, and it is quite difficult to discover leaks in large vaults. It is also perhaps desirable to house-owners, who, on account of the expense of getting rid of the contents of their

sinks, allow some of it to be absorbed in the soil. By far the larger part therefore of the *faecal matter*, which is not carried away, enters without the knowledge of the authorities into the canals and creeks of the city. That a change *for the better* in this respect is possible has been *practically demonstrated*. In Stuttgart, a perfect system of vaults has been properly constructed, into which small privy-vaults empty at frequent intervals.

This system is in use for about 100,000 inhabitants and 50,000 cubic yards of *faecal matter* are removed annually, which contain according to proof, over 90 per cent. of accumulated *faecal matter*, therefore 10 per cent. of it disappears in the soil, canals and rivers. It would be a mistake to maintain that such a system could, without further difficulty, be introduced into Munich. However desirable it might appear to insure a more cleanly condition of things, no city has taken the matter of removal of the *faecal matter* into consideration without experiencing that the greatest difficulty in cleaning the city is *not a question of removing the excrement, but the final disposal of it.*

Cities are *dependent* upon the regular removal of the crude material for farming industry, and thus can only utilize it at stated seasons. Even when extensive land-owners bind themselves to receive the same regularly, and it is sent as freight, still the entire accumulation of Mun-

ich—400 cubic yards per working day—could not be regularly removed or disposed of.

The experience of even smaller cities teaches that unfavorable weather, such as heavy rains or heavy snow-storms, render driving to the fields impossible, causing much inconvenience where the regular removal in this manner is contracted for. *But what would then happen in event of an epidemic?* The shipping as rail road freight *must be* prohibited, which would leave nothing for such cities, but to suffer the deplorable consequences of finally allowing the accumulated matter to run into the public water-courses. Instead of the "*English*" soaking system, the "*Wild*" soaking system would be brought into practice, by which the matter, instead of going directly to the water from the sinks, would first be carried about.

To a careful observer of this question, it will be interesting to compare the articles in the papers of two years ago, entitled ; "The Voice of the People," with the present one. At that time the City Magistrate was willing to regulate the removal of the material and to divide the work by districts. Numerous protests followed against this monopoly which was to be imposed upon the public charter. Now, since the appearance of cholera in Southern France, the communications take quite another form. People wonder that the authorities have not long since regulated the matter, and that the existing condition of af-

fairs has not been changed to one more worthy. If the cholera makes greater advances and a learned authority should declare that the immediate removal of the fresh *fæcal matter*, (and the delivery of the same to the farmers to be used at once for fertilizing,) to be the very best means to guard against it, there would be no objection too great for the people ! But what would the farmers say ? They would decline with indignation the infected material so freely offered them. It is plain to be seen that the opposing factions are not to be reconciled without introducing a new factor as connecting link.

The active element between the interests of the city's inhabitants and the farmers is an industry. When the *fæcal matter* has been changed into a *marketable merchandise both sides* are assisted. *What is demanded is, a system of preparation which is technically and exhaustively worked out, so that the factory can be carried on in or near the city and at all seasons; a system through which all the germs of disease contained in the fæcal matter are rendered positively harmless, the material itself made perfect, no longer injurious to health, and changed into a valuable fertilizing powder, so fine that it may be strewn.*

The product of such a factory is not dependent upon the time of year nor upon the farms in the vicinity of the city ; it can if necessary be kept any length of time, or sent any distance as freight. The objection that the *productions* of such a factory would not find a *ready*

market falls to the ground and shows an entire *ignorance* of its value.

In Germany alone the yearly trade in expensive pulverized fertilizers exceeds *twenty-five millions of dollars*, and the annual import into the Empire from foreign countries amounts to more than *twenty-one millions of dollars*, while the consumption is steadily on the increase. It is also noteworthy that the *guano deposits of South America*, so rich with nitrogen, are gradually diminishing, and the substitute for this organic nitrogenous fertilizer is only to be found in the *faecal deposits* of cities. But if all the larger and more important cities of Germany had these factories in operation, the *annual production would not equal the sum of money which goes out of the country every year for foreign fertilizers*.

Another equally important fact in this connection is the *profitable* manufacture of this *faecal matter*. It is often, and from various quarters asserted with unconcealed satisfaction, that several experiments to this end have failed, but nothing for or against this subject is proved by such statements. In the first place, not nearly as many extensive experiments as are said to have been made, have practically been tried. Since such undertakings could only be projected with the co-operation of the city authorities, and with the knowledge of all who were interested in it, the reports of such experiments did not give the required satisfaction.

In proportion to the experiments made in other branches of manufacture, in sugar and dye factories for instance, the number is insignificant. Again, crude methods and ill-constructed apparatus were used as a basis. Insufficient preparatory experiments on the physical and chemical contents of the *fecal matter* led to false constructions or caused a waste of fertilizing material ; and also many substances were *used* which destroyed the efficiency of the fertilizer. The true and principal cause of the failure of the former *poudrette* factories lies in the want of individual perseverance and pecuniary means.

In view of the condition of the *fecal matter*, a great deal of *courage* and *perseverance* is necessary in order to experiment with it for years on a large scale. Besides, the question : *why no former poudrette method* amounted to anything, has *no interest* for any but *specialists* in this branch of industry. In the course of events, their history has become *antiquated*, while through *our factory* in Augsburg, the manipulation of the *fecal matter* and the city cleaning question depending thereon have become an accomplished measure. *The uninterrupted and remunerative running of this factory proves that once established with the proper fundamental principle of the operation it was only necessary to continue with the experiments until all the technical difficulties were overcome.*

Our Augsburg Fæcal Extract Manufactory, which is situated within the city limits and in the

neighborhood of other factories, treats the fæcal matter in the following manner: The mass is partially brought to the factory from the houses at intervals of from 8 to 14 days in air-tight barrels or casks, and partially at longer intervals drawn from the vaults by suction in the ordinary casks. Immediately upon reaching the factory it is mixed with sulphur, and the gases which are caused by this manipulation are burned under the grate of a smoke-consuming steam boiler. The fæcal matter, thus treated with sulphur and heat, is then subjected to a steaming and drying-out process for several hours at a temperature of over 120° Celsius. It is the unanimous opinion of the leading hygienists that such a degree of heat is the surest and obviously the most thorough disinfectant. The germs of disease are thus completely disorganized, and Dr. Koch has recently declared the treatment with acid to be the best method of rendering infected matter harmless. The fæcal matter does not again leave the apparatus until it appears in the form of a valuable pulverized fertilizer. The vapors which are formed during the steaming process are condensed, and flow out mixed with twelve times the quantity of spring water. All the gases which are not condensable, (relatively a very insignificant quantity) are consumed under the grate of the boiler. The material prepared in this manner has not only the advantage of disposing of all doubts as to its being prejudicial

to health, but it has also a high value as a fertilizer.

The valuable properties of the crude material in the *fecal matter* are preserved and are found in the pulverized fertilizer, and during the whole process *nothing* is lost but the *clear water* which runs to waste, and that has no value whatever.

Notwithstanding the short time since this factory has been in operation, the business has already assumed great dimensions, and the Augsburg production is partly shipped to the neighborhood and partly to distant places—to Switzerland and the Rhine. When it is taken into consideration, further, that the Augsburg factory is comparatively a small one, treating the *fecal matter* of only about 25,000 inhabitants, and that it was not thoroughly established or perfected through *experience*, but through a long succession of *experiments* that it exists at all, it nevertheless works and pays with commendable regularity.

It is plain to see that the fitting up of larger factories which could be more cheaply done under existing circumstances, would undoubtedly produce a sure and good revenue ; and the erection of such factories should be in proportion to their importance and working power and not expensive.

It requires after the foregoing description no further explanation of the fact that cities, through the regular business in the raw material, are relieved from all eventualities, and without

the troublesome considerations of seasons or epidemics, can *fully dispose* of their *fecal matter*. There is, however, another difficulty to be considered, which, in point of importance to the national, economical and sanitary questions, is not to be undervalued ; the regular treating of *fecal matter* is the only positive method of securing the perfect riddance of it. Cases similar to that of Munich, and many other places, where the quantity removed apparently contains the whole deposit, but which in reality is not more than half of the material actually produced, are through the existence of such a factory utterly impossible ; the known quantity of the *fecal powder* and the chemical analysis of the kali and phosphate gives with perfect accuracy the quantity of *fecal stuff* which has been removed.

When the result obtained is taken as a basis and at the same time the nitrogen and ammonia in the fertilizer produced agrees, it is then easily determined in what degree of decomposition the *fecal* deposits are. This is a further advantage of great importance ! The *fecal matter* decays, very soon after its deposition, and liberates sharp smelling ammonia and other gases formed during decomposition, which pollute the air of houses ; while the foul odor from the *fecal matter* lying in houses is highly injurious to health, the situation is a little more serious—since when the fungi of decomposition are de-

veloped, the germs of disease find their nourishment. On the other hand it is to the financial interest of the manufacturer to receive the material if possible before decomposition has set in as in that case the least possible quantity of ammonia will have evaporated.

The factory must therefore do what it can either to secure the *fecal matter* as soon as possible after its deposition, or hinder decomposition while it is lying in the vaults, and in Augsburg the preparatory steps are being taken towards disinfection in the privy-vaults themselves, through the process going on in the factory. Such an organization, by which the financial interests of the manufacturer and the sanitary interests of the house-owners, go hand in hand, leads much more surely to the desired end, than when the disinfection is imposed upon the house-owners. While one foolishly pours carbolic acid in the sink, another thinks it sufficient to moisten the waste-pipes here and there, and a third does nothing at all. But from a factory where the regular carrying out of the disinfecting process is already there, and this process is carried on in such a way that not only is the *fecal matter* rendered odorless for the house, but the disagreeable smell of the disinfectants themselves is done away with.

It would take us far from the matter in hand were we to dwell more exhaustively upon this point; attention need only be drawn to this

one ; although hygienists differ as to how far the germs of disease may be rendered harmless by disinfection. One thing at any rate is positive, that the germs may be arrested in their development by properly managed disinfection ; and this is thoroughly the case when a common-sense removal and treatment of the *fecal matter* is made use of. So the cholera and other contagious diseases first become dangerous by means of excrement. If we can succeed through disinfection in arresting this dangerous development, till the material reaches the factory, the germs of disease through the high degree of heat would then forever be removed. By this medium, the manufacturer can thus reconcile the conflicting interests of house-owners and cultivate the soil. The *fecal matter* can then be regularly and completely removed, treated on a sanitary principle, and even during violent epidemics, rendered harmless. The farmer will receive from the same an excellent and transportable fertilizer, and whereas now Germany annually expends millions of dollars in foreign countries for the manufactured fertilizer, these sums will be kept within the country and many workmen will find employment in the factories."

THE VON PODEWILS' FÆCAL AND CREMATION COMPANY.

No. 111 LIBERTY STREET, (Rooms 1 & 2.)

NEW YORK, September, 1884.

We deem it our duty to publish the above, the many suggestions which have been made from all sides inducing us to come forward with the result of our experience, and also with our personal knowledge of the subject. We have no desire to create any anxiety by our description of the state of matters here, but it is of great importance to bring the same before the public, to avoid large and unnecessary expenses in constructing a pumping and sewer system to rid their place of the fæcal matter, while a practical and well tried system has already been proven successful, from which we can, at a small outlay, have the benefit of long tedious experiments which have cost large sums of money.

Thus, we have shown the only method by which this end can be accomplished, though not perhaps immediately, may be the case in the near future, and relieve the authorities and citizens from prevalent helplessness, through the disposal of this *fæcal matter*.

This Company is now prepared to negotiate with Sanitary Boards, Municipal Corporations, or Business Syndicates for the introduction of the Von Podewils' system, in any part of the United States.

Respectfully submitted,

VON PODEWILS' FÆCAL AND CREMATION CO.

